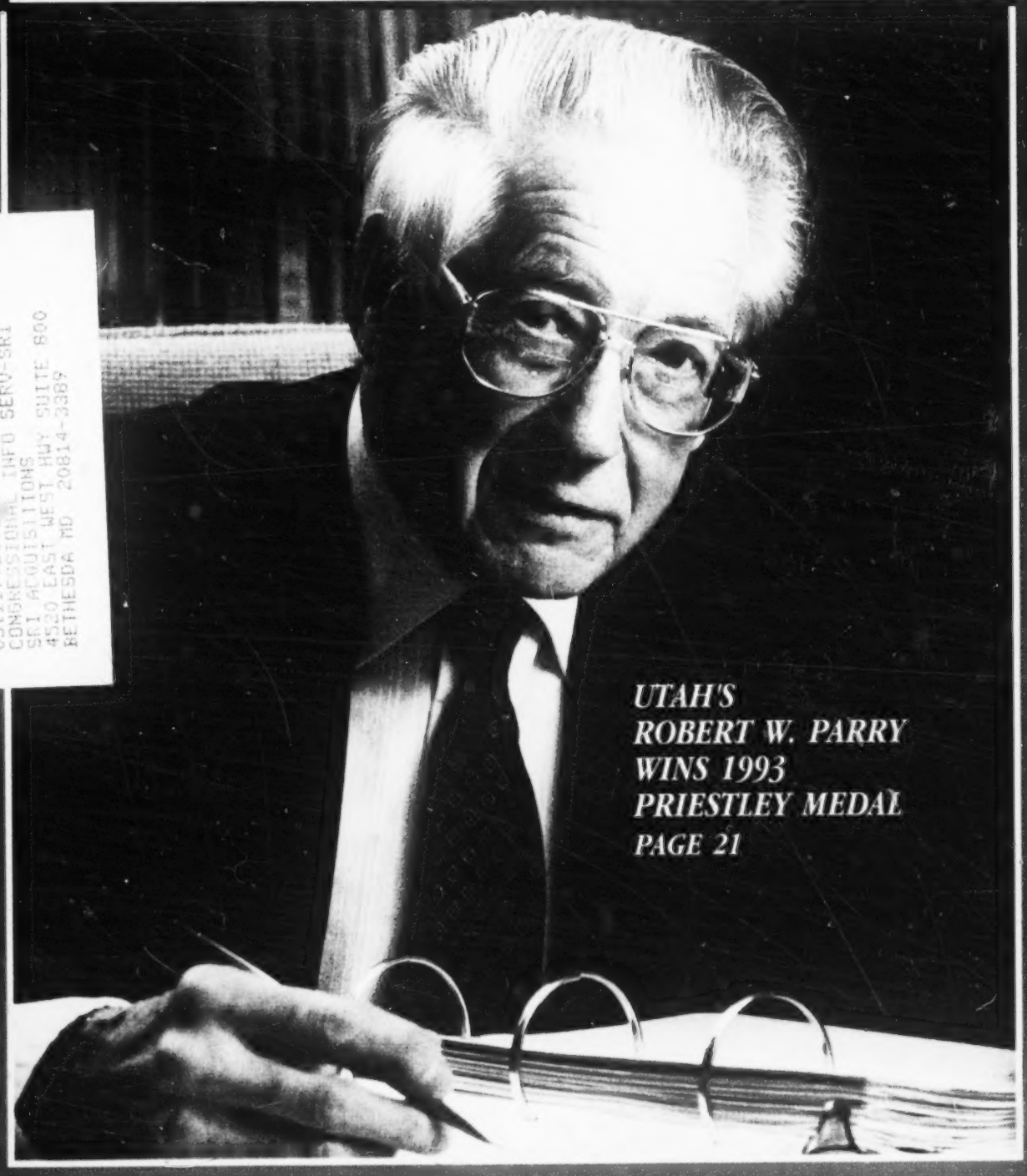
CHEMICAL & ENGINEERING NEWS

C&EN

MAY 25, 1992

HERCULES CHAIRMAN PUTS COMPANY ON MORE PROFITABLE COURSE PAGE 8



UTAH'S ROBERT W. PARRY WINS 1993 PRIESTLEY MEDAL PAGE 21

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CHEMICAL & ENGINEERING NEWS

C&EN

MAY 25, 1992

NEWS OF THE WEEK

■ President Bush decides to allow companies to increase air emissions without public notice, siding with industry against EPA and irking Congress. **Page 4**

■ Brazil auctions off Copesul petrochemical complex for $805 million, taking a major step in its program to privatize state-owned industries. **Page 5**

■ Global cooling can be expected over the next couple years because of emissions from eruption of the Mount Pinatubo volcano in the Philippines last June. **Page 5**

■ NASA successfully carries out first flight of new space shuttle *Endeavour*, including spectacular rescue and redeployment of communications satellite. **Page 6**

■ Arnold & Mabel Beckman Foundation will give $5 million to Scripps Research Institute to support chemical research. **Page 6**

COVER: Photo by Terry D. Newfarmer

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BUSINESS

Divestitures, joint ventures, other moves are in the cards at Hercules as chairman Thomas Gossage plots course to improve profitability for the troubled company. **Page 8**

Companies with environmental policies that go beyond compliance with government guidelines are focus of World Resources Institute book. **Page 11**

Continued vitality of U.S. biotechnology industry is dependent on healthy technology exchange program with Japan, according to National Research Council report. **Page 11**

British Petroleum's chemicals unit launches "open communications" program aimed at garnering public trust. **Page 12**

GOVERNMENT

Research and development projects face funding cuts as Congress and Administration tussle over what is and isn't necessary in fiscal 1992 budget. **Page 14**

National and international groups are developing tighter controls, faster phaseouts for ozone-depleting compounds. **Page 16**

House bill would append pollution research funds to Resource Conservation & Recovery Act's reauthorization. **Page 16**

SCIENCE/TECHNOLOGY

Ethylene producers turn to revamping to increase production capacity and still retain capital cost advantages. **Page 18**

Carbon nitride, β-C_3N_4, developed by researchers at Northwestern University, may be harder than diamond. **Page 20**

BOOKS

Tug-of-war between cold fusion skeptics and believers continues, with nuclear chemist John Huizenga explaining his disbelief in latest book on the subject. **Page 23**

ACS NEWS

Second set of 1992 Petroleum Research Foundation grants has been approved by the ACS Board, adding $4.03 million to PRF commitments for this year. **Page 25**

PRIESTLEY MEDAL

Robert W. Parry, distinguished professor of chemistry at the University of Utah, will receive ACS's 1993 Priestley Medal in recognition of his contributions to chemical research and education and his service to the society. Page 21

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LETTERS

Global warming

In your editorial on global warming (C&EN, April 27, page 3), you state, "Over the past 10,000 years average global temperature has never been more than about 1 °C warmer or cooler than it is today."

Why limit yourself to 10,000 years? Twenty thousand years ago, North America down to the latitude of the present New York City was covered by ice thousands of feet thick. In the past million years, a short time by geological standards, there have been repeated glacial episodes separated by relatively short interglacial stages. Considering that the average interglacial stage has not been longer than about 12,000 or 15,000 years, we may well be near the end of the present interglacial interval. If so, any greenhouse effect may be a blessing, not a curse. A degree or two of warming should be better than half the world covered by ice.

Studies of the greenhouse effect all seem to assume that it is the only cause of climatic change; that without the effect the climate would remain forever as it is today in this best of all possible worlds. A very improbable base for setting world economic policy.

George Gibson
Upper Montclair, N.J.

Synthesis of RDX

I believe an error regarding the synthesis of the high explosive RDX, also known as cyclonite, appeared in Stephen Stinson's obituary of John Sheehan (C&EN, March 30, page 6). The improved method for producing RDX was the invention of Werner E. Bachmann (1901–51).

In the fall of 1940, a group of organic chemists met with Roger Adams at the University of Illinois under the aegis of the National Defense Research Committee to discuss how best to contribute to the war effort. Bachmann (University of Michigan) was assigned the problem of devising a better synthesis of RDX. Sheehan, who had just finished his doctoral thesis under Bachmann, joined the RDX project in January 1941. During the following months, Bachmann invented the "combination process" in which 2 moles of RDX are formed from 1 mole of hexamine (U.S. Patent 2,798,870). Sheehan, as Bachmann's junior colleague, made active and important contributions to this research.

For his synthesis of RDX, Bachmann was given the Naval Ordnance Award in 1945, and in 1948 was granted the Presidential Certificate of Merit, and, from the British government, the King's Medal.

As a lifelong friend of Sheehan's and as a friend and colleague of Bachmann's, my knowledge of this history is firsthand. When in October 1941 Sheehan left Michigan to go with Merck & Co., I joined Bachmann in continuing his investigation of the chemistry of RDX.

E. L. Jenner
Wilmington, Del.

Calibrating thermometers

An informative article by Richard A. Houghton and George M. Woodwell in *Scientific American* **[260,** 36 (1989)] compares three indirect global thermometers applied to the 2000-meter-deep Vostok ice core from Antarctica, dating back 160,000 years into prehistory. The hydrogen/deuterium ratio, the $^{18}O/^{16}O$ ratio, and the percentage of CO_2 in entrapped air bubbles have all been used to estimate the long-term time dependence of global temperature.

Hydrogen and oxygen isotope ratios have been used to calibrate atmospheric CO_2 as a secondary global thermometer. Since the CO_2 deposited in Antarctica has always had to come primarily from other parts of the globe where things were growing, it does not represent temperatures in Antarctica. It does not represent temperatures on high mountaintops, or in the north polar regions, or even in the vast deserts of the globe, even though

Letters to the Editor

C&EN encourages readers to contribute to this letters section. However, please keep letters reasonably short—400 words or fewer. Because we receive a heavy volume of letters, persons writing letters are limited, as a general rule, to one letter within any given six-month period.

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Second Set of 1992 ACS-PRF Grants Approved

Acting on recommendations from the February meeting of the Petroleum Research Fund advisory board, the ACS Board of Directors has approved 147 new or continuing ACS-PRF grants-in-aid. Thirty-four of the grants include a supplement of $3000 to involve an undergraduate student in the research. The board's action adds $4,039,646 to PRF commitments for 1992.

The new grants were recommended by the PRF advisory board from a total of 400 proposals. A third and final set of 1992 PRF grants will be announced this summer. Proposals for 1993 PRF grants are now being accepted. Applicants should note that the maximum values for ACS-PRF grants in 1993 have been increased as follows: Type AC grants, $25,000 per year for up to three years; Type B grants, $25,000 over two years; and Type G grants, $20,000 over two years. Also, the maximum salary and benefits that the principal investigator may receive each year is $5000; the annual limit for travel is $1000. Applicants from Ph.D. departments may request a $3000 supplement to involve an undergraduate in the research.

The "36th Annual Report on Research Under Sponsorship of the Petroleum Research Fund" will be available in May. Individuals who wish a complimentary copy, or information and application forms for current ACS-PRF grant programs, should write to Petroleum Research Fund, American Chemical Society, 1155—16th St., N.W., Washington, D.C. 20036, or call (202) 872-4481.

ACS-PRF Grants for Fundamental Research in the Petroleum Field (Type AC)

Richard D. Adams, U of South Carolina. Studies of the Coordination and Ring-Opening Reactions of Strained-Ring Thioethers with Metal Carbonyl Cluster Complexes. $40,000

William C. Agosta, Rockefeller U. Abstraction of Hydrogen by Nitrogen and Oxygen in Heteroaromatic Ketones. $40,000

Steven R. Angle, U of California, Riverside. Enantioselective Synthesis of Pipecolic Acids. $40,000

Steven M. Bachrach, Northern Illinois U. Electron Density Analysis of Organic Reaction Mechanisms. $40,000

Ian Baker, Dartmouth C. Synchrotron X-Ray Topographic Study of Deformation in Polycrystalline Ice. $37,136

John L. Belletire, U of Cincinnati. Strained-Ring Heterocyclic Targets via Free-Radical Cyclization. $43,000

Brian E. Bent, Columbia U. Carbon-Carbon Bond Formation on Copper Surfaces. $63,000

Richard Bersohn, Columbia U. Tests of Mode-Selective Chemistry in Polyatomic Molecules. $40,000

Silvio E. Biali, Hebrew U of Jerusalem. Stereochemistry of Polysubstituted Cyclohexanes. $40,000

Neal E. Blair, North Carolina State U. The Intramolecular Carbon Isotopic Composition of Amino Acids in the Marine Environment. $43,000

Jennifer S. Brodbelt, U of Texas, Austin. Host-Guest Chemistry in the Gas Phase. $40,000

Barry K. Carpenter, Cornell U. Control of Selectivity through Cosolvent Design. $40,000

Peggy Cebe, Massachusetts Inst. of Technology. Relaxation of the Crystal-Amorphous Interphase in Polymer Blends. $40,000

John S. Compton, U of South Florida, St. Petersburg. Deposition and Alteration of Volcanic Material in the Monterey Formation, California. $40,000

Robert E. Criss, U of California, Davis. Stable Isotope Study of Perennial Saline Springs Related to Abnormally High Fluid Pressures and Active Thrusting in the Western Sacramento Valley, California. $40,000

M. David Curtis, U of Michigan. Covalent Organotransition Metal Polymers. $43,000

Robert H. Davis, U of Colorado. The Nature and Effects of Contact Forces Involving Solid Particles in Fluids. $43,000

J. Paul Devlin, Oklahoma State U. Dynamics at Ice Surfaces: Spectra of Adsorbed Small Molecules. $43,000

Rudiger Dieckmann, Cornell U. Demixing of Doped Zirconia in Potential Gradients. $43,000

Paul E. Dietze, U of Maryland, Baltimore County. Solvolysis of Silyl Ethers. $40,000

Steven G. Driese, Claudia I. Mora, U of Tennessee. Stable Isotope Composition of Pedogenic Carbonate in Central and Southern Appalachian Red-Bed Sequences: Monitor of Elevated P_{CO_2} during the Paleozoic? $43,000

Paul L. Dubin, Indiana U-Purdue U, Indianapolis. Polyelectrolyte-Protein Complexes. $40,000

Sandra S. Eaton, U of Denver, Colorado Seminary. EPR of C_{60} Radicals. $43,000

Irving R. Epstein, Brandeis U. Design and Analysis of Turing Structures in Reaction-Diffusion Systems. $40,000

Glenn T. Evans, Oregon State U. Dynamics in Liquid Crystals. $40,000

Graham R. Fleming, U of Chicago. Chemical Dynamics Probed with Phase-Locked Femtosecond Pulses. $40,000

Roger Frech, U of Oklahoma. Ionic Association in Polymer-Salt Complexes: Effect of Chain Length and Plasticizers. $40,000

Robert E. Garrison, U of California, Santa Cruz. Shelfal Sedimentary Processes and Cycles in a Miocene Upwelling Environment. $43,000

Alice P. Gast, Stanford U. The Structure of Adsorbed Block Copolymers in Flow. $40,000

Richard S. Givens, U of Kansas. Mechanistic and Exploratory Investigations of Hydroperoxyester-Induced Chemiluminescence. $43,000

Timothy Halpin-Healy, Barnard C. Investigations into the Self-Affine Fractal Geometry of Nature, as Revealed in Condensed Matter Physics. $40,000

Eric J. Heller, U of Washington. Semiclassical Investigations of Molecular Spectroscopy. $40,000

Reinhard Hesse, McGill U. Layer-Charge Development and Fundamental-Particle Nature of I/S Mixed-Layer Clays during Progressive Burial Diagenesis in Beaufort-MacKenzie Basin: HRTEM Study. $40,000

David A. Hoagland, U of Massachusetts. A Study of Flow-Induced Fracture of Polymer Chains by Gel Electrophoresis. $40,000

Catherine E. Housecroft, U of Cambridge. Multiruthenaboranes as Precursors in Organometallic Chemistry and to Linked and Fused Clusters. $40,000

W. Phillip Huskey, Rutgers U. Characterization of Solvation Changes Accompanying Proton Transfer from Carbon. $40,000

Clark M. Johnson, U of Wisconsin, Madison. U-Pb Age Determinations of Carbonate Diagenesis in the Michigan Basin and on the Wisconsin Arch. $40,000

Brent Koplitz, Tulane U. Site-Specific Photochemistry Involving Organic and Metalorganic Systems. $40,000

Mary J. Kraus, U of Colorado. Floodplain Deposition, Pedogenesis, and Shallow Burial Diagenesis in the Lower Mississippi River Valley. $40,000

Robert L. Kuczkowski, U of Michigan. Weak Complexes of Sulfur Dioxide. $40,000

Sanat K. Kumar, Pennsylvania State U. Calculation of the Gibbs Free Energy of Polymeric Systems from Simulations. $40,000

Koop Lammertsma, U of Alabama, Birmingham. A Reactivity-Selectivity Study of Phosphinidenes. $40,000

John W. Larsen, Lehigh U. Macromolecular Structure of Type I and II Kerogen. $40,000

Kenneth R. Leopold, U of Minnesota. Microwave Studies of the Transition from van der Waals to Covalent Bonding. $40,000

C. Peter Lillya, U of Massachusetts. An Experimental Study of the Statics and Dynamics of Discotic Nematic Liquid Crystals. $40,000

George Majetich, U of Georgia. New Allylsilane-Based Annulation Strategies. $43,000

Murli H. Manghnani, U of Hawaii, Manoa. Laboratory Study of the Elastic and Anelastic Properties of Reservoir Rocks: Emphasis on Carbonate Rocks. $40,000

Ursula Mazur, Kerry W. Hipps, Washington State U. Resonant Tunneling in Metal Phthalocyanines: an Experimental Study. $43,000

Mark L. McLaughlin, Louisiana State U. Diene-Metallocene Polymers from Ring-Opening Metathesis Polymerization. $40,000

David R. McMillin, Purdue U. Understanding Blue Copper Oxidases and the Catalytic Reduction of Dioxygen. $43,000

William E. McMullen, Texas A&M U. Density Functional Theories of Polymer Interfaces. $40,000

Donald F. McNeill, U of Miami, RSMAS. Magnetostratigraphic Dating Constraints on Sea-Level and Seismic Reflector Synchroneity in Carbonate Platform and Slope Settings: Bahamas Drilling Project Cores. $40,000

John H. Nelson, U of Nevada, Reno. Transition Metal Promoted Reactions of Coordinated Phosphines. $43,000

Cheuk-Yiu Ng, Iowa State U. Photoionization and Photoelectron-Photoion Coincidence Studies of Transition Metal Carbonyls and Their Fragments. $40,000

Amos M. Nur, Stanford U. Source Rock, Maturation-Induced Cracks, and Seismic Mapping. $40,000

James S. Panek, Boston U. Asymmetric Synthesis with Optically Active α-Substituted β-Silyl-Hex-4-Enoates. $43,000

Sidney Redner, Boston U. Kinetics of Lattice Models of Catalysis. $40,000

Arnold L. Rheingold, U of Delaware. Diphosphenes and Diarsenes in Cluster Synthesis: Preparation of Metal/Main-Group Multiple Bonds. $40,000

James A. Saunders, Auburn U. Reaction-Path Modeling of Intrabasin Chemical Evolution of Oil-Field Brines. $35,600

John G. Sclater, U of California, San Diego. The Implication of Heat Flow Anomalies for the Temperature and Geometry of Salt Structures on the Texas Continental Slope, Gulf of Mexico. $39,935

Kenneth Showalter, West Virginia U. Spatiotemporal Behavior in Chemical Systems. $43,000

Mark A. Smith, U of Arizona. Temperature-Dependent Free-Radical Kinetics between 20 and 200 K. $43,000

Alan D. Sokal, New York U. New Numerical Methods for Polymer Simulations. $40,000

Roger G. Tobin, Michigan State U. Adsorption and Dissociation on Stepped Metal Surfaces. $40,000

Veronica Vaida, U of Colorado. Spectroscopy and Photoreactivity of Ozone Heteroclusters. $40,000

John G. Verkade, Iowa State U. New Chemistry of Novel Four- and Five-Coordinate Main Group Compounds. $40,000

Robert M. Waymouth, Stanford U. Mechanism of Catalytic Olefin/Grignard Cross-Coupling and Diene Cyclization Reactions. $40,000

Paul Weimer, U of Colorado. An Integrated Sequence Stratigraphic Study of Neogene Turbidite Systems, Northern Gulf of Mexico. $40,000

Mark E. Welker, Wake Forest U. Synthesis and Reaction Chemistry of 2-Transition-Metal-Substituted 1,3-Diene Complexes. $43,000

James R. Wood, Michigan Technological U. Geochemical Signatures of Cements in Sands and Fractures, Elk Hills, California: Implications for Large-Scale Transport. $43,000

ACS-PRF Grants for Fundamental Research in the Petroleum Field (Type B)

Christopher J. Abelt, C of William & Mary. Diversion of Benzophenone Photochemistry to Isotoluene Enol Intermediates. $20,000

Alan M. Bailey, U of Southwestern Louisiana. Compositional Variation of Solutions Expelled from Peats during Laboratory Coalification. $20,000

Richard N. Biagioni, Southwest Missouri State U. Chemistry of Hexahapto Indenyl and Fluorenyl Transition Metal Complexes. $20,000

Susan T. Collins, California State U, Northridge. Matrix-Isolation Studies of Excited-State Proton-Transfer Systems. $20,000

Stephen L. Davis, George Mason U. Theoretical Investigations of Collisional Excitation in Nonrigid Molecules. $20,000

Thomas E. Goodwin, Hendrix C. New Synthetic Transformations of 3-Bromo-2-Methoxypropene. $20,000

Fred J. Grieman, Pomona C. Electronic Spectroscopy of Organometallic Cations. $20,000

Norris W. Hoffman, U of South Alabama. Low-Valent Fluoro, Acetato, and Chloro Complexes of Coordinatively Saturated d^4, d^8, and d^{10} Species. $20,000

Narayan S. Hosmane, Southern Methodist U. Novel Metallacarboranes of "Carbons Adjacent" and "Carbons Apart" C_2B_4-Carborane Systems. $20,000

Richard H. Judge, U of Wisconsin, Parkside. Rotational Analysis of the Singlet-Triplet Spectrum of Selenoformaldehyde, CH_2Se. $20,000

Aldo D. Migone, Southern Illinois U, Carbondale. Adsorption Studies of Simple Molecules on Boron Nitride. $20,000

Neal R. O'Brien, State U of New York, Potsdam. The Periodicity and Causes of Lamination in Shale. $19,975

D. Jeffrey Over, State U of New York, C at Geneseo. Depositional History, Biostratigraphy, and the Frasnian-Famennian Boundary of the Middle-Late Upper Devonian Marine Clastic Sequence in the Central and Northern Appalachian Basin. $20,000

Rabindra N. Roy, Drury C. Thermodynamic Study of Electrolyte Mixtures. $20,000

Ronald R. Ruminski, U of Colorado, Colorado Springs. Synthesis and Characterization of Low-Spin d^6 Metal Complexes Bound through the Bridging Ligand Dipyrido(2,3-a:2′,3′-h)phenazine. $20,000

Allen M. Schoffstall, U of Colorado, Colorado Springs. Intramolecular 1,3-Dipolar Cycloadditions in Synthesis of Sugar Derivatives. $20,000

Greg A. Slough, C of Wooster. Catalytic Cyclization of *N*-Acyl-Phenylsulfonamides. $20,000

James N. Spencer, Claude H. Yoder, Franklin & Marshall C. A Structural and Thermodynamic Study of Lewis Interactions in Host-Guest Complexation Reactions. $20,000

ACS-PRF Grants for Fundamental Research in the Petroleum Field (Type G)

John V. Badding, Pennsylvania State U. High-Pressure Chemistry of Alkali and Alkaline Earth Metals. $18,000

David A. Becker, Virginia Polytechnic Inst. & State U. Isoxazole-Methylene Aziridine Rearrangement: Synthesis and Chemistry of an Unusual Class of Functionalized Enaminones. $18,000

David Deming, U of Oklahoma. Thermal History of Sedimentary Basins. $21,000

Maya Elrick, U of New Mexico. Cyclostratigraphy and Dolomitization of Middle Devonian Carbonate Deposits, Eastern Great Basin. $18,000

George L. Gould, U of Illinois, Chicago. Chemistry of Difluoroacetylene and Fluorocarbyne Ligands. $18,000

John N. Haseltine, Georgia Inst. of Technology. Molecular Recognition of Sugars: Artificial Receptors for Monosaccharides. $21,000

Kenneth Haug, Lehigh U. A Theoretical Study of the Optical and Electrical Properties of Doped Sodalite Zeolite. $21,000

Zhibing Hu, U of North Texas. Ultrasonic and Dielectric Investigation of the Critical Phase Transition in Polymer Gels. $21,000

Rein U. Kirss, Northeastern U. α-Transmitted Electrical and Magnetic Effects in Diiron Complexes Bridged by Oligosilanes and Oligostannanes. $18,000

Prashant N. Kumta, Carnegie Mellon U. Chemical Synthesis and Structural Investigation of Ultrafine Alkoxy-Sulfide Precursors to Rare Earth Chalcogenides. $18,000

Eric C. Long, Indiana U-Purdue U, Indianapolis. Stabilization of DNA Recognition Helices through Strategically Placed Metal Binding Sites. $21,000

Frederick C. MacKintosh, U of Michigan. Effects of Composition and Orientational Order in Fluid Membranes. $18,000

Pawel Mazur, City U of New York, Hunter C. Monte Carlo Studies of the Ionic Environment Near Oligoelectrolytes. $21,000

Gordon J. Miller, Iowa State U. Transition Metal Polycompounds: Synthesis, Structure, and Bonding. $18,000

Michael J. Natan, Pennsylvania State U. Metal Nanosurfaces: Synthesis, Purification, and Surface-Enhanced Raman Scattering. $21,000

Michael Y. Ogawa, Bowling Green State U. Photoinduced Electron-Transfer across Artificial Beta-Sheets. $21,000

David A. Osleger, U of California, Riverside. Cycle/Sequence Stratigraphy of Backreef to Inner Shelf Carbonates, Seven Rivers Formation, Guadalupe Mountains, New Mexico. $18,000

Ronald J. Phillips, U of California, Davis. Hindered Diffusion in Porous and Fibrous Media. $18,000

Julianto Pranata, U of Arkansas. Computer Simulations of Chemical Reactions in Solution. $18,000

Shankar B. Rananavare, Oregon Graduate Inst. of Science & Technology. Dynamics of Fluctuating Interfaces. $21,000

Tarek Sammakia, U of Colorado. The Design of New Asymmetric Reaction Processes. $18,000

Daniel T. Schwartz, U of Washington. Electrolytic Fabrication and Testing of Nano-Structured Alloys for Corrosion-Resistant Coatings. $18,000

Eugene I. Shakhnovich, Harvard U. Towards Quantitative Theory for Protein Stability. $18,000

Lowell D. Stott, U of Southern California. An Investigation of Stable Isotopic Anomalies in Marine Organic Matter during Climate and Primary Productivity Cycles in San Pedro Basin, California Borderland. $21,000

John E. Straub, Boston U. Novel Simulation Algorithms for Conformational Sampling and Free Energy Calculations on Biomolecules and Polymers. $18,000

John B. Vincent, U of Alabama. Characterization of Low Molecular Weight Chromium-Binding Substance and Synthetic Model Complexes. $21,000

John M. Wiencek, Rutgers U. Simultaneous Separation and Polymerization of Aromatics by a Bienzymatically Catalyzed Membrane Reactor. $21,000

E. Wrenn Wooten, U of Michigan. Structure and Dynamics of Oligosaccharides and Glycoproteins. $21,000

Charles K. Zercher, U of New Hampshire. Synthetic and Conformational Studies of Polycyclopropanes. $21,000

Kenneth M. Beck, U of Central Florida. Dynamics of Dissociation in Polycyclic Aromatic Hydrocarbons. $18,000

Frances R. Blase, Haverford C. Use of β-Keto σ-Dioxolane Sulfoxides for Stereoselective Reactions. $18,000

Xiangning Chen, U of Nebraska, Kearney. Singlet Oxidation of Substituted 7-Thiabicyclo[2.2.1]heptanes. $18,000

Thomas D. Getman, Southern Illinois U, Edwardsville. Precursors to Group III(13) Nitrides. $18,000

Karen Grove, San Francisco State U. Quaternary Sedimentation along the San Andreas Fault North of San Francisco, California. $18,000

Russell G. Kerr, Florida Atlantic U. Biosynthesis of Pregnanes in Marine Invertebrates. $18,000

Leigh C. Porter, U of Texas, El Paso. Thiophene Binding and Reactivity Studies Involving Ru and Os Transition Metal Hydrides. $18,000

James L. Sadd, Occidental C. Holocene Depositional History and Sedimentary Processes in the Mugu Lagoon-Barrier System, California. $18,000

Da-Ming Zhu, U of Missouri, Kansas City. Thermodynamic Study of Multilayer Xe Films Adsorbed on Graphite. $18,000

Marc Zimmer, Connecticut C. Model Systems for Aldehyde Ferrodoxin Oxidoreductase, a Tungsten Enzyme. $18,000

ACS-PRF Grants for Fundamental Research in the Petroleum Field (Type SE)

Tze-Chiang Chung, on behalf of the ACS Division of Polymeric Materials: Science & Engineering Inc. Recent Advances in Polyolefin Polymers, ACS national meeting, Washington, D.C., fall 1992. $2000

Joseph J. Gajewski, on behalf of the ACS Division of Organic Chemistry. James Flack Norris Award, ACS national meeting, San Francisco, spring 1992. $2000

Boualem Hammouda, on behalf of the ACS Division of Polymeric Materials: Science & Engineering Inc. Neutron Scattering from Polymers, ACS national meeting, Washington, D.C., fall 1992. $2000

Hannes Jonsson, on behalf of the ACS divisions of Colloid & Surface Chemistry and Physical Chemistry. Theoretical Aspects of Materials-Related Surface Chemistry, ACS national meeting, Washington, D.C., fall 1992. $2000

Kenneth D. Karlin, on behalf of Johns Hopkins U. Bioinorganic Copper Chemistry, Johns Hopkins U, August 1992. $2000

Howard E. Katz, on behalf of the Materials Research Society. Ordered Materials by Design, Materials Research Society Fall Meeting, Boston, November–December 1992. $2000

Jacek Lipkowski, on behalf of the ACS Division of Colloid & Surface Chemistry. The Electrical Double Layer (honoring Roger Parsons), ACS national meeting, San Francisco, spring 1992. $2000

James E. McGrath, on behalf of the ACS divisions of Polymer Chemistry Inc. and Polymeric Materials: Science & Engineering Inc. Polymer Matrix Resins for Composites, ACS national meeting, San Francisco, spring 1992. $2000

S. Ted Oyama, Joe W. Hightower, on behalf of Clarkson U. Catalytic Selective Oxidation, ACS national meeting, Washington, D.C., fall 1992. $2000

Joseph B. Schlenoff, on behalf of the ACS Division of Colloid & Surface Chemistry. Electrochemistry of Conducting Polymers, ACS national meeting, Washington, D.C., fall 1992. $2000

Russell H. Schmehl, on behalf of the ACS Division of Colloid & Surface Chemistry. Modification of Ground- and Excited-State Properties by Supramolecular Assemblies, ACS national meeting, San Francisco, spring 1992. $1500

Martin Schoell, on behalf of the ACS Division of Geochemistry Inc. Compound Specific Isotope Analysis, ACS national meeting, San Francisco, spring 1992. $2000

Bernard Shizgal, on behalf of Rarefied Gas Dynamics Symposia. Rarefied Gas Dynamics, 18th Rarefied Gas Dynamics Symposium (RGD 18), Vancouver, British Columbia, July 1992. $2000

William C. Stwalley, on behalf of U of Iowa. 8th Interdisciplinary Laser Science Conference, Albuquerque, N.M., September 1992. $2000

Gregory R. J. Thatcher, on behalf of the ACS Division of Carbohydrate Chemistry. The Anomeric Effect, ACS national meeting, Washington, D.C., fall 1992. $2000

Martha K. Turckes, on behalf of the ACS Division of Education. ACS Project SEED—Supplementary Program for Summer 1992. $22,500

Robert D. Walkup, on behalf of the ACS South Plains Section. Organic Chemistry (A. I. Meyers Symposium) at the 48th ACS Southwest Regional Meeting, Lubbock, Tex., October 1992. $2000

Anthony J. I. Ward, on behalf of the ACS Division of Colloid & Surface Chemistry. Surfactants and Association Colloids: Solubilization Phenomena, ACS national meeting, Washington, D.C., fall 1992. $2000

Thaddeus E. Whyte Jr., on behalf of the International Zeolite Association. 9th International Zeolite Conference, Montreal, July 1992. $2000

Richard W. Zuehlke, on behalf of Gordon Research Conferences. TARP—a Teaching and Research Program, Summer 1992. $5000 □

New Frasch grants in agricultural chemistry

At its December 1991 meeting, the ACS Board of Directors, on recommendation of the ACS Committee on Frasch Foundation Grants, voted to recommend to the trustee 17 grants for research in agricultural chemistry. The new Frasch grants, with a total value of $1,444,246, are for a five-year period starting July 1, 1992, and are subject to yearly review of progress.

ACS advises the United States Trust Co. of New York, trustee of the Herman Frasch Foundation, on the conduct of Frasch grants for research in agricultural chemistry. The next competition for Frasch grants will be held in 1996.

John A. Browse, Washington State U. CDP-Choline: Diacylglycerol Cholinephosphotransferase: a Key Enzyme in Oilseed Lipid Metabolism. $84,246

Edward J. Brush, Tufts U. Enzyme Chemistry in the Formation and Detoxification of Cyanide in Cyanogenic Plants. $85,000

James B. Callis, U of Washington. Noninvasive Field Monitoring of Key Parameters of Plant Physiology. $85,000

Lynn Epstein, U of California, Berkeley. Regulation of Fungal Spore Germination in Soil. $85,000

James B. Gloer, U of Iowa. New Antiinsectan Compounds from Fungi. $85,000

Bruce J. Hrnjez, North Dakota State U. Enzymatic Catalysis in Supercritical Fluids: a Methodology for Production of Enhanced Value Products from Seed Oils. $85,000

David A. Lightfoot, Southern Illinois U, Carbondale. Altering Biochemical Responses of Plants to Ammonium Fertilizers and Nitrification Inhibitors. $85,000

Basil J. Nikolau, Iowa State U. The Chemistry and Biochemistry of Uncommon Plant Lipids. $85,000

Glenn D. Prestwich, Scott McN. Sieburth, State U of New York, Stony Brook. Insect Peptides: Structures, Receptors, and Mimicry. $85,000

R. Michael Roe, North Carolina State U. Transition State Inhibitors and Diagnostic Substrates for Insect Esterases Responsible for Insecticide Resistance. $85,000

Mary E. Rumpho, U of Maryland. Regulation of Chloroplast Biochemistry and Metabolite Transport. $85,000

Charles R. Sanders II, Case Western Reserve U. Structures of Phytochemically Relevant Oligosaccharides: New Methods and Concepts. $85,000

Charles E. Strouse, U of California, Los Angeles. Lattice Clathrates for the Controlled Delivery of Agricultural Chemicals. $85,000

Virginia Walbot, Stanford U. Impact of Cold Stress on Cytochrome Oxidase, Alternative Oxidase, Glycolysis, and ATP Synthesis in Maize and Rice Seedlings. $85,000

Jonathan D. Walton, Michigan State U. Evolution of a Cyclic Peptide Gene Cluster from a Fungal Maize Pathogen. $85,000

Robert M. Williams, Colorado State U. Inhibition of Lysine Biosynthesis. $85,000

Ronald W. Woodard, U of Michigan. Mechanistic Studies of 1-Aminocyclopropane-1-Carboxylic Acid Synthase: Catalysis and Inactivation. $85,000

Shutter Priority photo

Youngsters visit ACS as part of minority partnership

Students from the Kiddie Kollege program at Johnson C. Smith University (JCSU) in Charlotte, N.C., gather in front of American Chemical Society headquarters in Washington, D.C., during a visit last month as part of an ACS Education Division project funded by the Department of Education's Minority Science Improvement Program. The youngsters participated in hands-on science activities from *WonderScience* magazine under the guidance of ACS staffers. The project aims to establish five model partnerships throughout the U.S. that include an ACS local section, a federally designated minority college or university, and local industry. The program in Charlotte represents the first of these partnerships and the Kiddie Kollege at JCSU is the focus of that partnership. The other partners in Charlotte are the Charlotte-Mecklenberg school system, the Chamber of Commerce, Inroads Inc., and the ACS Piedmont Section.

Regional meeting call for papers

The ACS Washington, D.C., Section will host the Joint 26th Middle Atlantic/44th Southeastern Regional Meeting, Dec. 6–9 at the Hyatt Regency Crystal City Hotel in Arlington, Va. The program features 28 symposia and 10 workshops. Papers are solicited from high school chemistry research, technician research, inorganic chemistry, analytical chemistry, organic chemistry, biochemistry, physical chemistry, polymer chemistry, and biotechnology.

One camera-ready abstract on the standard ACS form and four copies should be submitted by July 1 to Charles F. Hammer, Department of Chemistry, Georgetown University, Washington, D.C. 20057, phone (202) 687-6170. Contributors should indicate if they prefer a poster session.

For general information about the meeting, registration, or housing, contact B. Mandava, SRS Intl., 1625 K St., N.W., Suite 1000, Washington, D.C. 20006, phone (202) 223-1424. □

Papers for Southwest Regional Meeting

The ACS 48th Southwest Regional Meeting will be held Oct. 21–23 in Lubbock, Tex. Papers are being solicited for general sessions in the following chemical areas: analytical/environmental, biochemistry, chemical education, organic, inorganic, and physical. Symposia to be offered include the A. I. Meyers Symposium on Organic Chemistry; Intramolecular Dynamics and Kinetics of Excited Molecules; Molecular Modeling; Reactivity and Structure of Group 6B Metal Compounds; Biological Electron Transport; Synthetic Hosts for Recognition of Molecular and Ionic Guests; Southwest Luminescence Symposium I: Theory, Dynamics, and Ap-

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